

# ELATE 2UZ VVTI SUPERCHARGER MANIFOLD (INTERCOOLED AND NON-INTERCOOLED)

(UNIVERSAL INSTALLATION PROCESS TO SUIT TOYOTA AND LEXUS 2UZ VVTI ENGINES ONLY)



## INSTALLATION INSTRUCTIONS

**IMPORTANT \*\* ELATE MFG. RECOMMENDS THAT THIS PRODUCT IS INSTALLED BY A QUALIFIED AUTOMOTIVE MECHANIC OR BY SOMEONE WHO IS MECHANICALLY CONFIDENT IN UNDERTAKING THIS TASK WITH THE EXPECTATION THAT THERE POTENTIALLY COULD BE SCENARIOS THAT ARISE DURING FITMENT THAT MAY NOT BE COVERED BY THESE INSTALLATION INSTRUCTIONS.**

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### REMOVAL AND MODIFICATION OF THE FRONT WATER CROSSOVER

**\*\* THIS TASK SHOULD BE PERFORMED AS SOON AS THE FACTORY INTAKE MANIFOLD HAS BEEN REMOVED AS IT'S EASIER TO ACCESS AND REFIT. IF YOU ARE UNABLE TO COMPLETE THIS STEP THEN PLEASE REACH OUT TO US AS WE WILL DO THIS FOR YOU FREE OF CHARGE IF YOU SEND YOUR CROSSOVER TO US \*\***

1. WITH THE FACTORY INTAKE MANIFOLD OFF THE ENGINE, THERMOSTAT HOUSING LOOSTENED AND TOP RADIATOR HOSE OFF REMOVE THE 4 X NUTS (2 ON EACH HEAD) SECURING THE CROSSOVER TO THE ENGINE.
2. LIFT OFF THE CROSSOVER OFF THE STUDS WITH THE THERMOSTAT HOUSING STILL ATTACHED.
3. SEPERATE THE THERMOSTAT HOUSING FROM THE CROSSOVER BY CAREFULLY PULLING AND TWISTING AT THE SAME TIME.
4. WITH THE CROSSOVER REMOVED MARK A LINE DOWN THE LENGTH OF THE RADIATOR OUTLET SECTION OF THE CASTING, THIS LINE WILL ACT AS AN ORIENTATION REFERENCE WHEN JOINING AGAIN (SEE PICTURE BELOW).
5. CUT A 80MM SECTION OUT OF THE AREA SHOWN BELOW (SEE PICTURE BELOW, AREA SHOWN IN RED).
6. PREPARE THE PIECES BEING WELDED BY USING THE CORRECT PREPARATION TECHNIQUES FOR THE WELDING PROCESS BEING USED. WE RECOMMEND AC TIG IF AVAILABLE.
7. ORIENTATE THE NECK AT A 45° - 55° ANGLE AND TRY TO ANGLE IT BACK TOWARDS THE ENGINE AS THIS WILL GIVE MAXIMUM BELT CLEARANCE ONCE THE NEW HOSE IS FITTED. TACK WELD INTO PLACE AND CHECK FITMENT / CLEARANCE OF THE MODIFIED CROSSOVER ON THE ENGINE. IF ALL LOOKS GOOD COMPLETE THE WELD AND PRESSURE TEST FOR LEAKS.
8. ONCE THE CROSSOVER MODIFICATION IS COMPLETE REFIT THE CROSSOVER TO THE ENGINE USING NEW OEM GASKETS OR GASKET SEALANT IF PREFERRED. USE O-RING GREASE OR SIMILAR LUBRICANT ON THE THERMOSTAT HOUSING O-RING WHEN ASSEMBLING.
9. TORQUE THE 4 NUTS TO 18 NM / 13 FT-LBF.

**BEFORE**



**AFTER**



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### MANIFOLD INSTALLATION

**\*\* THESE INSTRUCTIONS COVER THE INSTALLATION PROCESS ONLY AND ASSUMES THE INSTALLER IS COMPETENT ENOUGH TO REMOVE THE FACTORY INTAKE MANIFOLD AS PER THE TOYOTA SERVICE MANUAL. ENSURE THAT YOU HAVE DISCONNECTED THE BATTERY BEFORE COMMENCING ANY WORK \*\***

1. INSERT THE SUPPLIED 1/8 NPT 90° BARB FITTING INTO ONE OF THE TWO PORTS ON THE UNDERSIDE OF THE MANIFOLD, ENSURE THREAD SEALANT IS USED ON THE THREADS AND ONCE TIGHTENED SO IT FACES TOWARDS THE BACK OF THE MANIFOLD SET ASIDE WHILE YOU PREPARE THE ENGINE. THE SECOND PORT HAS BEEN ADDED FOR AND 1/8" NPT IAT SENSOR (HAL TECH / RACEWORKS) BUT CAN ALSO BE USED FOR ANOTHER BOOST REFERENCE PORT.
2. REMOVE THE 10 X M8 STUDS THAT WERE BEING USED TO FASTEN THE FACTORY LOWER INTAKE TO THE HEADS AS THESE ARE NO LONGER NEEDED. USE A PROPER STUD REMOVAL TOOL AND WD-40 TO MAKE THIS TASK EASIER.
3. FULLY CLEAN THE MOUNTING SURFACES ON THE CYLINDER HEADS AND INSPECT FOR ANY DAMAGE, IF DAMAGE IS PRESENT THEN IT WILL NEED TO BE RECTIFIED BEFORE CONTINUING.
4. PLACE THE 2 X INTAKE GASKETS BACK ON THE HEADS ENSURING THEY ARE ORIENTATED CORRECTLY. THIS WILL TAKE A STEADY HAND AS THE STUDS ARE NO LONGER PRESENT TO STOP THE GASKETS FROM MOVING. (IF YOU HAVE PURCHASED A FULL 2UZ VVTI KIT FROM US THEN THESE WOULD HAVE BEEN INCLUDED.)
5. GET THE MANIFOLD ASSEMBLY READY FOR INSTALLATION BY FITTING THE THE SUPPLIED VACUUM LINE TO THE BARB FITTING YOU INSTALLED EARLIER, WE ADVISE USING A CABLE TIE TO FULLY SECURE IT TO THE BARB FITTING.
6. CAREFULLY PLACE THE 2 X RUNNER SPACERS ONTO THE ENGINE WITH THE O-RINGS FACING UP THEN PLACE THE MANIFOLD ASSEMBLY ONTO THE RUNNERS. IF THE GASKETS SLIGHTLY MOVE THEN LIFT THE MANIFOLD OFF AGAIN AND REPOSITION. YOU MAY NEED TO REPOSITION THE HEATER LINE THAT RUNS DOWN THE LENGTH OF THE BLOCK TO GIVE CLEARANCE TO THE BARB FITTING ON THE UNDERSIDE OF THE MANIFOLD. THIS CAN BE DONE BY SLOTTING THE THROUGH HOLE ON THE MOUNT AT THE END OF THE HEATER LINE AND PUSHING THE HARD LINE OVER TO THE RIGHT.
7. INSERT THE 10 X M8X100 CAP SCREWS THROUGH THE MANIFOLD / SPACERS INTO THE HEADS (ENSURE THE INCLUDED WASHERS ARE USED). ONCE THROUGH THREAD THEM IN BY HAND AND TORQUE TO 18 NM / 13 FT-LBF. WE RECOMMEND APPLYING A SMALL AMOUNT OF ANTI-SEIZE TO THE BOLT THREADS PRIOR TO INSTALLING. TIGHTEN IN A CRISS CROSS PATTERN STARTING FROM THE INSIDE BOLTS AND WORKING YOUR WAY TO THE OUT.
8. REMOVE THE FUEL RAILS AND INJECTORS FROM THE FACTORY MANIFOLD.
9. REMOVE THE LOWER INJECTOR SEALS FROM THE INJECTORS IF STILL ATTACHED AND INSTALL THE SUPPLIED O-RINGS ONTO THE INJECTORS AND APPLY A SMALL AMOUNT OF O-RING GREASE.
10. INSTALL THE SUPPLIED FUEL RAIL ADAPTER WITH 1 X M8X10 BUTTON HEAD BOLT ON TO THE MOUNTS ON THE RIGHT-HAND SIDE OF THE MANIFOLD (LOOKING DIRECTLY AT THE INSTALL) AS THE RAILS ON THE RIGHT HAVE A WIDER MOUNT SPACING THAN THAT OF THE LEFT.



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11. INSTALL FACTORY FUEL RAILS AND INJECTORS ON TO THE MANIFOLD MAKING SURE TO USE THE SUPPLIED RAIL SPACERS IN PLACE OF THE FACTORY ONES. THE LONGER ONES GO TO THE LEFT WHERE THERE IS NO RAIL ADAPTER AND THE SHORTER ONES GO TO THE RIGHT AND MOUNT ON TO THE RAIL SPACER. NOTE THAT AT THIS STAGE YOU WILL DISCOVER THE HARD FUEL LINE CONNECTING THE 2 RAILS TOGETHER WILL NEED TO BE REPLACED WITH 400 SERIES -6AN LINE. WE RECOMMEND REMOVING THE FUEL DAMPENERS AND REPLACING WITH A BANJO BOLT AND AFTERMARKET BANJO BOLTS WITH -6AN MALE FLARES.
12. INSTALL YOUR HEAT EXCHANGER, W2A PUMP AND RESERVOIR MAKING SURE THE RESERVOIR IS ABOVE THE MANIFOLD HEIGHT OR AT LEAST AT THE SAME HEIGHT. FAILURE TO DO THIS WILL RESULT IN A SYSTEM THAT IS HARD TO BLEED. THE PUMP SHOULD ALSO BE SLIGHTLY LOWER THE HEAT EXCHANGER AS THESE PUMPS DO NOT 'SUCK' FLUID AND ARE REQUIRED TO BE FED. FOR THE EXTERNAL HEAT EXCHANGER, THE POSITION OF THIS WILL DEPEND ON THE VEHICLE BUT WE RECOMMEND IT IS DONE IN FRONT OF THE RADIATOR AND AC CONDENSER. BRACKETS WILL NEED TO BE MADE AND SOME MODIFICATIONS MAY BE NEEDED TO THE FACTORY RADIATOR SUPPORT
13. WIRE IN THE W2A PUMP TO A FUSED IGN+, ENSURE TO CHECK THE POLARITY IS WIRED CORRECTLY OR THE PUMP WILL SPIN IN THE WRONG DIRECTION. A 15A FUSED RELAY SHOULD BE USED AND THE PUMP SHOULD ONLY BE RUNNING ONCE THE IGNITION IS TURNED ON AND SHOULD BE OFF WHEN THE IGNITION IS OFF.
14. RUN YOUR -12AN LINES. THE 2 X 90° FITTINGS ARE USED FOR BEHIND THE MANIFOLD AND THE STRAIGHT FITTINGS ARE FOR THE HEAT EXCHANGER. WE SUGGEST DOING THE FOLLOWING:
  - A. RUN A HOSE FROM ONE SIDE OF THE MANIFOLD (EITHER SIDE IS FINE) TO THE TOP PORT ON THE RESERVOIR.
  - B. RUN A HOSE FROM THE LOW PORT ON THE RESERVOIR TO THE TOP -12AN FITTING OF THE HEAT EXCHANGER.
  - C. RUN A HOSE FROM THE LOWER -12AN FITTING OF THE HEAT EXCHANGER WILL TO THE INLET OF THE PUMP (TOP OF PUMP)
  - D. RUN A HOSE FROM THE OUTLET (SIDE OF PUMP) THROUGH TO THE OTHER 90° FITTING ON THE MANIFOLD
15. ONCE THE HOSES ARE ROUTED ENSURE THEY ARE SECURED AND AWAY FROM MOVING OBJECTS THAT MAY DAMAGE THEM.
16. THE RESERVOIR CAN NOW BE FILLED USING ETHYLENE GLYCOL BASED AUTOMOTIVE COOLANT AND DEIONISED WATER. DO THIS SLOWLY UP UNTIL THE RESERVOIR IS 1/2 FULL THEN START TO CYCLE THE PUMP WHICH WILL HELP BLEED THE SYSTEM. LOOK OUT FOR ANY LEAKS AND ADDRESS ACCORDINGLY.
17. WITH THE INTERCOOLER SYSTEM ALL BLED IT IS NOW TIME TO GET THE SUPERCHARGER INSTALLED.
18. APPLY A UNIFORM BEAD LOCTITE 518 OR SIMILAR FUEL RESISTANT GASKET SEALANT TO THE UNDERSIDE OF THE SUPERCHARGER IF USING A CHARGER THAT DOES NOT HAVE AN INTEGRATED SEAL ON THE UNDERSIDE (HARROP FDFI RANGE FOR EXAMPLE)
19. CAREFULLY PLACE THE SUPERCHARGER ON TO THE TOP PLATE.
20. INSERT THE SUPPLIED BOLTS WITH WASHERS THROUGH THE FLANGE INTO THE TOP PLATE AND TIGHTEN BY HAND.
21. ONCE NIPPED UP TORQUE THE M8 BOLTS DOWN TO 18 NM / 13 FT-LBF AND AGAIN DO SO IN A CRISS CROSS FASHION STARTING FROM THE MIDDLE WORKING OUTWARDS.
22. ATTACH THE VAC LINE THAT YOU INSTALLED ON THE UNDERSIDE OF THE MANIFOLD TO A VACUUM BANK / MANIFOLD. FROM THERE YOU CAN PLUMB UP TO THE BYPASS VALVE, FUEL REG, BOOST GAUGE, MAP SENOR, ETC. WHEN PLUMBING THE BYPASS HOOK UP TO THE TOP BARB ON THE BYPASS VALVE, THE BOTTOM PORT IS LEFT AS IS TO VENT TO ATMOSPHERE. NOTE THAT HARROP FDFI CHARGERS ALREADY HAVE THE BYPASS HOOKED UP.

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23. IF THE THROTTLE BODY ADAPTER HAS BEEN SUPPLIED NOT ALREADY FITTED TO THE SUPERCHARGER THEN DO THIS NOW USING THE SUPPLIED HARDWARE THE FLAT OF THE ADAPTER SHOULD BE TO THE FRONT OF THE CHARGER. PERMATEX ULTRA GREY OR SIMILAR SEALANT SHOULD BE USED BETWEEN THE THROTTLE BODY AND ADAPTER, THE OEM THROTTLE BODY BOLTS ARE TO BE USED.
24. THE FACTORY THROTTLE BODY WIRING WILL NEED TO BE EXTENDED. IF YOU ARE NOT CONFIDENT IN DOING THIS PLEASE REACH OUT TO AN AUTO ELECTRICIAN.
25. INSTALL AN INTAKE TUBE TO THE AIRBOX. THIS IS NOT INCLUDED WITH OUR KITS AS THEY ARE NOT DESIGNED TO BE VEHICLE SPECIFIC AT THIS STAGE.
26. INSTALL THE SMOOTH IDLER PULLEY AS PER THE INSTRUCTIONS FOUND ON OUR WEBSITE.
27. INSTALL AND ROUTE THE 6PK BELT AS SHOWN IN THE SCHEMATIC BELOW.
28. THE SUPERCHARGER KIT INSTALLATION IS NOW COMPLETE. YOU SHOULD NOW REATTACH ANY RADIATOR HOSES THAT WERE REMOVED, TOP UP FLUIDS, CONNECT THE FACTORY AFM / AIRBOX TO THE THROTTLE BODY, EXTEND ANY WIRING, HOOK UP THE BRAKE BOOSTER TO ONE OF THE PORTS ON THE CHARGER AND BLANK OFF ANYTHING NO LONGER BEING USED. DOUBLE CHECK EVERYTHING BEFORE STARTING THE ENGINE. FROM HERE ON OUT USE 98 RON (93 AKI) FUEL.
29. THE ENGINE CAN NOW BE STARTED AND ALLOWED TO IDLE, CHECK FOR LEAKS AGAIN AND THAT THE BELT IS TRACKING CORRECTLY. IF ALL APPEARS OK THE ENGINE CAN BE LEFT UNTIL IT REACHES OPERATING TEMP.
30. ONCE AT OPERATION TEMP TURN OFF THE ENGINE AND ALLOW TO COOL BEFORE CHECKING AND TOPPING UP FLUID LEVELS IF REQUIRED.

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